BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

DOCKET NO. 2013-199-WS

In the Matter of:

Application of United Utility Cos., Inc.	**)**
For Adjustment of Rates and Charges	**)**
And Modification of Certain Terms and	**)**
Conditions for the Provision of	**)**
Water and Sewer Service	**)**

Prepared Direct Testimony

of

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Principal
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On Behalf of

United Utility Companies, Inc.

September 12, 2013

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Introduction and Purpose

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Dylan W. D'Ascendis. I am a Principal of AUS Consultants, a full-service utility consulting firm with experience in all ratemaking disciplines. My business address is 155 Gaither Drive, Suite A, Mt. Laurel, New Jersey 08054.

Q. PLEASE SUMMARIZE YOUR PROFESSIONAL EXPERIENCE AND EDUCATIONAL BACKGROUND.

A. I offer expert testimony on behalf of investor-owned utilities on rate of return issues, including but not limited to common equity cost rate, fair rate of return, capital structure issues, credit quality issues, etc. I also assist in the preparation of rate filings, including but not limited to revenue requirements, rate design, class cost of service, original cost and lead/lag studies. I am a graduate of the University of Pennsylvania, where I received a Bachelor of Arts degree in Economic History. I have also received a Master of Business Administration with high honors and a concentration in finance and international business from Rutgers University. My full professional qualifications are provided in Appendix A.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose is to provide testimony on behalf of United Utility Companies, Inc. (UUC or the Company) relative to the appropriate common equity cost rate which it should be afforded the opportunity to earn on the common equity portion its jurisdictional rate base.

Q. WHAT IS YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. I recommend that the Public Service Commission of South Carolina (PSC SC or the Commission) authorize the Company the opportunity to earn a range of overall rate of return between 8.43% to 8.91% based upon the consolidated capital structure at December 31, 2012 of Utilities, Inc. (UI or the Parent), which consists of 52.44% long-

term debt and 47.56% common equity at an embedded debt cost rate of 6.60%, and my recommended range of common equity cost rates between 10.45% and 11.45%. The overall rate of return is summarized in Table 1 below:

Table 1

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Total Debt	52.44%	6.60%	3.47%
Common Equity	47.56	10.45% - 11.45%	4.97% - 5.45%
Total	100.00%		8.43% - 8.91%

Q. HAVE YOU PREPARED AN EXHIBIT IN SUPPORT OF YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. Yes. It is designated as Exhibit DWD-1, consisting of Schedules 1 through 9.

Summary

Q. PLEASE SUMMARIZE YOUR RECOMMENDED COMMON EQUITY COST RATE.

A. My recommended range of common equity cost rates between 10.45% and 11.45% is summarized on Schedule 1. As a wholly-owned subsidiary of UI, UUC's common stock is not publicly traded. That means that a market-based common equity cost rate cannot be determined directly for UUC. I have assessed the market-based common equity cost rates of companies of relatively similar, but not necessarily identical risk, i.e., a proxy group for insight into a recommended common equity cost rate applicable to UUC. Using companies of relatively comparable risk as proxies is consistent with the principles of fair rate of return established in the *Hope*[1] and *Bluefield*[2] cases. As stated above, no

[1] Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

[2] Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922).

proxy group can be identical in risk to UUC, so there must be an evaluation of relative risk between UUC and the proxy group to see if it is appropriate to make adjustments to the proxy group's indicated rate of return.

My recommendation results from the application of several cost of common equity models, the Discounted Cash Flow (DCF) approach, the Risk Premium Model (RPM) and the Capital Asset Pricing Model (CAPM) to the market data of the proxy group of nine water companies whose selection will be discussed below. In addition, I also applied the DCF, RPM and CAPM to the market data of domestic, non-price regulated companies comparable in total risk to the nine water companies.

The results derived from each are as follows:

Table 2

	Proxy Group of Nine Water Companies
Discounted Cash Flow Model	8.86%
Risk Premium Model	11.04
Capital Asset Pricing Model	10.12
Cost of Equity Models Applied to Comparable Risk, Non-Price Regulated Companies	10.83%
Indicated Common Equity Cost Rate	10.35%
Business Risk Adjustment	0.60
Indicated Common Equity Cost Rate	10.95%
Recommended Range of Common Equity Cost Rates	10.45% - 11.45%

After analyzing the cost rates based upon these models, I conclude that a common equity cost rate of 10.35% is indicated before any adjustments resulting from a relative risk

analysis between UUC and the proxy group. I then adjusted the indicated common equity cost rate upward by 0.60% to reflect UUC's smaller relative size as compared with the proxy group. Adding the small size adjustment to the indicated common equity cost rate results in an indicated common equity cost rate of 10.95%. My recommended range of common equity cost rates is 10.45% - 11.45%.

General Principles

Q. WHAT GENERAL PRINCIPLES HAVE YOU CONSIDERED IN ARRIVING AT YOUR RECOMMENDED RANGE OF COMMON EQUITY COST RATES?

A. In unregulated industries, the competition of the marketplace is the principal determinant of the price of products or services. For regulated public utilities, regulation must act as a substitute for marketplace competition. Assuring that the utility can fulfill its obligations to the public while providing safe and reliable service at all times requires a level of earnings sufficient to maintain the integrity of presently invested capital as well as permitting the attraction of needed new capital at a reasonable cost in competition with other firms of comparable risk, consistent with the fair rate of return standards established by the U.S. Supreme Court in the previously cited *Hope* and *Bluefield* cases. Consequently, marketplace data must be relied upon in assessing a common equity cost rate appropriate for ratemaking purposes. Just as the use of the market data for the proxy group adds reliability to the informed expert judgment used in arriving at a recommended common equity cost rate, the use of multiple common equity cost rate models also adds reliability when arriving at a recommended common equity cost rate.

Business Risk

Q. PLEASE DEFINE BUSINESS RISK AND EXPLAIN WHY IT IS IMPORTANT TO THE DETERMINATION OF A FAIR RATE OF RETURN.

A. Business risk is the riskiness of a company's common stock without the use of debt and/or preferred capital. Examples of such general business risks to all utilities, i.e., electric, natural gas distribution and water, include size, the quality of management, the regulatory environment, customer mix and concentration of customers, service territory growth, capital intensity and the like, which have a direct bearing on earnings.

Business risk is important to the determination of a fair rate of return because the greater the level of risk, the greater the rate of return investors demand, consistent with the basic financial principle of risk and return.

Q. WHAT BUSINESS RISKS FACE THE WATER INDUSTRY IN GENERAL?

A. Water is essential to life and it is the only utility product which is intended for customers to ingest. Consequently, water quality is of paramount importance to the health and well-being of customers and for this reason is subject to strict health and safety regulations. Beyond health and safety concerns, water utility customers also have significant aesthetic concerns regarding the water delivered to them by utilities and regulators pay close attention to these concerns because of the strong feelings they arouse in consumers.

Water utilities obtain supply from wells, aquifers, surface water reservoirs or streams and rivers. Throughout the years, well supplies and aquifers have been environmentally threatened, with historically minor purification treatment giving way to major well rehabilitation, treatment or replacement. Simultaneously, safe drinking water quality standards have tightened considerably, requiring multiple treatments. Supply availability is also limited by drought, water source overuse, runoff, threatened species/habitat protection and other operational, political and environmental factors.

Increasingly stringent standards necessitate additional capital investment in the distribution and treatment of water, exacerbating the pressure on free cashflows which arises from increased capital expenditures for infrastructure repair and replacement.

Water utilities are typically vertically engaged in the entire process of acquiring supply, production, treatment and distribution of water. Accordingly, water utilities require significant capital investment in not only sources of supply and production (wells and treatment facilities), but also in storage facilities as well as transmission and distribution systems, both to serve additional customers and to replace aging systems, creating a major risk facing the water and wastewater utility industry.

Value Line Investment Survey[3] (*Value Line*) observes the following about the water utility industry:

> The reason is that the status of America's water infrastructure is very poor. Indeed, in its most recent report issued earlier this year, the American Society of Civil Engineers (ASCE) found that of all of the infrastructure in the U.S., the segment that is the most underfunded is water, at 70%. A similar engineering group forecasts that the country will have to spend $1 trillion over the next 25 years to modernize the system.
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> * * *
>
> Where will water utilities get the billions of dollars required to upgrade and modernize their systems? Whether investor or municipal owned, very few entities will be able to generate sufficient cash flow to pay for the capital expenditures required. (For example, the well-regarded New York City Water Authority alone has $29 billion in debt outstanding.) We should also point out that when examining a water utility, an investor should always focus on how much a utility will have to spend relative to its size, and how will it finance these expenditures. An increase in shares outstanding will dilute earnings while higher interest costs can weaken finances and eat away at profits.
>
> Operating a company efficiently is only the first challenge that a water utility faces. The second, and perhaps as important, is getting a proper return on investment. State authorities make the final ruling on how much

[3] *Value Line Investment Survey*, July 19, 2013.

> a utility can charge. To a large extent, this is outside of the utility's control. The best it can do, is keep costs down. The rest is up to the state. Politicians from both sides of the aisle face pressure to keep rates low. So, a utility is always at risk of spending prudently but then being denied the right to earn a fair return on its investment.

The water utility industry also experiences low depreciation rates. Depreciation rates are one of the principal sources of internal cash flows for all utilities. Water utilities' assets have long lives and long capital recovery periods. As such, water utilities face greater risk due to inflation which results in a higher replacement cost per dollar of net plant.

Water utility capital expenditures as large as those projected by the ASCE and AWWA as noted by *Value Line* will require significant financing. The three sources typically used for financing are debt, equity (common and preferred) and cash flow. All three are intricately linked to the opportunity to earn a sufficient rate of return as well as the ability to achieve that return. Consistent with the *Hope* and *Bluefield*, the return must be sufficient enough to maintain credit quality as well as enable the attraction of necessary new capital, be it debt or equity capital. If unable to raise debt or equity capital, the utility must turn to either retained earnings or free cash flow (operating cash flow (funds from operations) minus capital expenditures), both of which are directly linked to earning a sufficient rate of return. The level of free cash flows represents a company's ability to meet the needs of its debt and equity holders. If either retained earnings or free cashflows is inadequate, it will be nearly impossible for the utility to attract the needed new capital to invest in needed new infrastructure. An insufficient rate of return can be financially devastating for utilities and for their customers, the ratepayers. Magnifying the impact of water utilities' potentially inadequate cashflow position is a general inability to achieve their authorized rate of return on common equity.

The water utility industry's high degree of capital intensity and low depreciation rates, coupled with the need for substantial infrastructure capital spending, require regulatory support in the form of adequate and timely rate relief, including sufficient authorized returns on common equity as recognized by *Value Line*, so water utilities will be able to successfully meet the challenges they face.

Financial Risk

Q. PLEASE DEFINE FINANCIAL RISK AND EXPLAIN WHY IT IS IMPORTANT TO THE DETERMINATION OF A FAIR RATE OF RETURN.

A. Financial risk is the additional risk created by the introduction of debt and preferred stock into the capital structure. The higher the proportion of debt and preferred stock in the capital structure, the higher the financial risk which must be factored into the common equity cost rate because the Company has a scheduled obligation to pay for that capital, and failure to pay would result in a default or possible bankruptcy. Consistent with the previously mentioned basic financial principle of risk and return, i.e., investors demand a higher common equity return as compensation for bearing higher investment risk.

Q. NEVERTHELESS, CAN THE COMBINED BUSINESS RISKS, I.E., INVESTMENT RISK OF AN ENTERPRISE, BE PROXIED BY BOND AND CREDIT RATINGS?

A. Yes, similar bond ratings reflect and are representative of similar combined business and financial risks, i.e., total risk faced by bond investors. Although specific business or financial risks may differ between companies, the same bond rating indicates that the combined risks are similar, albeit not necessarily equal, as the purpose of the bond rating process is to assess credit quality or credit risk and not common equity risk. Risk distinctions within S&P's bond rating categories are recognized by a plus or minus, i.e., within the A category, an S&P rating can be at A+, A, or A-. Similarly, risk distinctions

for Moody's ratings are distinguished by numerical rating gradations, i.e., within the A category, a Moody's rating can be A1, A2 and A3.

Q. THAT BEING SAID, DO RATING AGENCIES REFLECT COMPANY SIZE IN THEIR BOND RATINGS?

A. No. Neither S&P nor Moody's have company size as a criteria for debt ratings which means a relative size analysis would still need to be performed on companies with similar bond ratings because bond rating agencies do not take company size into account when assigning ratings.

United Utility Companies, Inc.

Q. HAVE YOU REVIEWED FINANCIAL DATA FOR UUC?

A. Yes. UUC provides water and wastewater services to approximately 1,650 customers. UUC is a wholly-owned subsidiary of UI, which in turn is a wholly-owned subsidiary of Corix, Inc. (Corix). UUC's common stock is not publicly traded.

Proxy Group

Q. PLEASE EXPLAIN HOW YOU CHOSE THE PROXY GROUP OF NINE WATER COMPANIES.

A. The basis of selection for the proxy group was to select those companies which meet the following criteria:

1) they are included in the Water Company Group of AUS Utility Reports (September 2013);
2) they have 70% or greater of 2012 total operating income derived from and 70% or greater of 2012 total assets devoted to regulated water operations;
3) at the time of the preparation of this testimony, they had not publicly announced that they were involved in any major merger or acquisition activity, i.e., one publicly-traded utility merging with or acquiring another;

4) they have not cut or omitted their common dividends during the five years ending 2012 or through the time of the preparation of this testimony;

5) they have a *Value Line* adjusted beta;

6) they have a positive *Value Line* five-year dividends per share (DPS) growth rate projection; and

7) they have *Value Line*, Reuters, Zacks or Yahoo! Finance, consensus five-year earnings per share (EPS) growth rate projections.

The following nine companies met these criteria: American States Water Co., American Water Works Co., Inc., Aqua America, Inc., Artesian Resources Corp., California Water Service Corp., Connecticut Water Service, Inc., Middlesex Water Co., SJW Corp. and York Water Co.

Q. PLEASE DESCRIBE SCHEDULE 2.

A. Schedule 2 contains comparative capitalization and financial statistics for the nine water companies for the years 2008-2012.

As shown on Schedule 2, during the five-year period ending 2012, the historically achieved average earnings rate on book common equity for the group averaged 8.26%. The average common equity ratio based upon total permanent capital (excluding short-term debt) was 49.42%, and the average dividend payout ratio was 64.06%.

Total debt as a percent of EBITDA for the years 2008-2012 ranged between 3.84 and 9.07 times, averaging 5.51 times, while funds from operations relative to total debt ranged from 16.14% to 20.65%, averaging 17.82%.

Common Equity Cost Rate Models

Q. ARE THE COST OF COMMON EQUITY MODELS YOU USE MARKET-BASED MODELS?

A. Yes. The DCF model is market-based in that market prices are used in developing the dividend yield component of the model. The RPM is market-based in that the bond ratings and expected bond yields used in the application of the RPM reflect the market's assessment of bond/credit risk. In addition, the use of betas to determine the equity risk premium also reflects the market's assessment of market/systematic risk as betas are derived from regression analyses of market prices. The Predictive Risk Premium Model™ (PRPM™) uses monthly market returns in addition to expectations of the risk-free rate. The CAPM is market-based for many of the same reasons that the RPM is market-based i.e., the use of expected bond (Treasury bond) yields and betas. The process of selecting the comparable risk non-price regulated companies is market-based in that it is based upon statistics which result from regression analyses of market prices and reflect the market's assessment of total risk.

Discounted Cash Flow Model (DCF)

Q. WHAT IS THE THEORETICAL BASIS OF THE DCF MODEL?

A. The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory indicates that an investor buys a stock for an expected total return rate which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate). Mathematically, the dividend yield on market price plus a growth rate equals the capitalization rate, i.e., the total common equity return rate expected by investors.

Q. WHICH VERSION OF THE DCF MODEL DO YOU USE?

A. I use the single-stage constant growth DCF model.

Q. PLEASE DESCRIBE THE DIVIDEND YIELD YOU USED IN YOUR APPLICATION OF THE DCF MODEL.

A. The unadjusted dividend yields are based upon a recent (August 30, 2013) indicated dividend divided by the average of closing market prices for the 60 trading days ending August 30, 2013 as shown in Column 1 on page 1 of Schedule 3.

Q. PLEASE EXPLAIN THE ADJUSTED DIVIDEND YIELD SHOWN ON PAGE 1 OF SCHEDULE 3, COLUMN 6.

A. Because dividends are paid periodically (quarterly), as opposed to continuously (daily), an adjustment must be made to the dividend yield. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

DCF theory calls for the use of the full growth rate, or D_1, in calculating the dividend yield component of the model. Since the various companies in the proxy group increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component, or $D_{1/2}$. This is a conservative approach which does not overstate the dividend yield which should be representative of the next twelve-month period. Therefore, the actual average dividend yields in Column 1 on page 1 of Schedule 3 have been adjusted upward to reflect one-half the average projected growth rate shown in Column 6.

Q. PLEASE EXPLAIN THE BASIS OF THE GROWTH RATES OF THE PROXY GROUP WHICH YOU USE IN YOUR APPLICATION OF THE DCF MODEL.

A. Schedule 4 shows that approximately 49% of the common shares of the nine water companies are held by individuals as opposed to institutional investors. Individual

investors with more limited resources than institutional investors, are more likely to place great significance on the opinions expressed by widely available financial information services, such as *Value Line*, Reuters, Zacks and Yahoo! Finance. Investors realize that analysts have significant insight into the dynamics of the industries and individual companies they analyze, as well as company's abilities to effectively manage the effects of changing laws and regulations and ever changing economic and market conditions. For these reasons, I use analyst's five-year forecasts of earnings per share growth in my DCF analysis.

Over the long run, there can be no growth in DPS without growth in EPS. Security analysts' earnings expectations have a more significant influence on market prices than dividend expectations. Thus, the use of earnings growth rates in a DCF analysis provides a better matching between investors' market price appreciation expectations and the growth rate component of the DCF.

Q. PLEASE SUMMARIZE THE DCF MODEL RESULTS.

A. As shown on page 1 of Schedule 3, the average result of the application of the single-stage DCF model is 8.87% while the median result is 8.84% and the average of the two is 8.86% for the nine water companies. In arriving at a conclusion of a DCF-indicated common equity cost rate for the proxy group, I have relied upon an average of the median and the average results of the DCF. This approach takes into consideration all of the proxy companies' results while mitigating the high and low outliers of those individual results.

The Risk Premium Model (RPM)

Q. PLEASE DESCRIBE THE THEORETICAL BASIS OF THE RPM.

A. The RPM is based upon the basic financial principle of risk and return, namely, that investors require greater returns for bearing greater risk. The RPM recognizes that

common equity capital has greater investment risk than debt capital, as common equity shareholders are last in line in any claim on a company's assets and earnings, with debt holders being first in line. As a result, investors require higher returns from common stocks than from investment in bonds, to compensate them for bearing the additional risk.

While the investors' required common equity return cannot be directly determined or observed, it is possible to directly observe bond returns and yields. According to RPM theory, one can assess a common equity risk premium over bonds, either historically or prospectively, and then use that premium to derive a cost rate of common equity. The cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium over that cost rate to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings in the event of a liquidation.

Q. PLEASE EXPLAIN HOW YOU DERIVED YOUR INDICATED COST OF COMMON EQUITY BASED UPON THE RPM.

A. I relied upon the results of the application of two risk premium methods. The first method is the Predictive Risk Premium Model™ (PRPM™), while the second method is a risk premium model using a total market approach.

Q. PLEASE EXPLAIN THE PRPM™.

A. The PRPM™, published in the *Journal of Regulatory Economics (JRE)*[4], was developed from the work of Robert F. Engle who shared the Nobel Prize in Economics in 2003 "for methods of analyzing economic time series with time-varying volatility (ARCH)[5]" with "ARCH" standing for autoregressive conditional heteroskedasticity. In other words,

[4] "A New Approach for Estimating the Equity Risk Premium for Public Utilities", Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D. The Journal of Regulatory Economics (December 2011), 40:261-278.

[5] www.nobelprize.org

volatility changes over time and is related from one period to the next, especially in financial markets. Engle discovered that the volatility in prices and returns also clusters over time and is therefore highly predictable and can be used to predict future levels of risk and risk premiums. The PRPM™ estimates the risk / return relationship directly, as the predicted equity risk premium is generated by the prediction of volatility, i.e., risk. In addition, the PRPM™ is not based upon an estimate of investor behavior, but rather upon the evaluation of the results of that behavior, i.e., the variance of historical equity risk premiums.

The inputs to the model are the historical returns on the common shares of each company in the proxy group minus the historical monthly yield on long-term U.S. Treasury securities through August 2013. Using a generalized form of ARCH, known as GARCH, each water company's projected equity risk premium was determined using Eviews© statistical software. The forecasted 30-year U.S. Treasury Bond (Note) yield based on the consensus forecast derived from *Blue Chip Financial Forecasts (Blue Chip)*, which was then added to each company's PRPM™-derived equity risk premium to arrive at an indicated cost of common equity as shown on page 2 of Schedule 5. The average PRPM™ indicated common equity cost rate is 12.55%, the median is 11.35% and the average of the two is 11.95% which I will rely upon, consistent with my reliance upon the average of the median and average results of the DCF discussed above.

Q. PLEASE EXPLAIN THE TOTAL MARKET APPROACH RPM.

A. The total market approach RPM adds a prospective public utility bond yield to an equity risk premium which is derived from a beta-adjusted total market equity risk premium and an equity risk premium based upon the S&P Utilities Index.

Q. PLEASE EXPLAIN THE BASIS OF THE EXPECTED BOND YIELD OF 5.33% APPLICABLE TO THE NINE WATER COMPANIES SHOWN ON PAGE 3 OF SCHEDULE 5.

A. The first step in the total market approach RPM analysis is to determine the expected bond yield. Because both ratemaking and the cost of capital, including common equity cost rate, are prospective in nature, a prospective yield on similarly-rated long-term debt is essential. I rely upon a consensus forecast of about 50 economists of the expected yield on Aaa rated corporate bonds for the six calendar quarters ending with the fourth calendar quarter of 2014 and for the years 2015-2019 and 2020-2024 as derived from the September 1 and June 1, 2013 *Blue Chip* (shown on pages 9 and 10 of Schedule 5, respectively). As shown on Line No. 1 of page 3 of Schedule 5, the average expected yield on Moody's Aaa rated corporate bonds is 5.08%. An adjustment of 0.29% is necessary to adjust that average Aaa corporate bond yield to be equivalent to a Moody's A2 rated public utility bond, as shown on Line No. 2 and explained in Note 2 resulting in an expected bond yield applicable to a Moody's A rated public utility bond of 5.37% as shown on Line No. 3.

Since the nine water companies' average Moody's bond rating is split between A1 and A2, a downward adjustment of 0.04% is necessary to make the prospective bond yield applicable to an A1/A2 split public utility bond, as detailed in Note 3 on page 3 of Schedule 5. Therefore, the expected specific bond yield is 5.33% for the nine water companies as shown on Line No. 5.

Q. PLEASE EXPLAIN THE METHOD USED TO ESTIMATE THE EQUITY RISK PREMIUM.

A. I considered the results of two different market equity risk premium studies based upon Ibbotson Associates' data, *Value Line's* forecasted total annual market return in excess of

the prospective yield on Moody's Aaa corporate bonds, as well as two different studies of the equity risk premium for public utilities with Moody's A rated bonds as detailed on pages 8 and 11 of Schedule 5. As shown on Line No. 3, page 7, the mean equity risk premium is 4.80%. This estimate is the result of an average of a beta-derived equity risk premium as well as the average public utility equity risk premium relative to bonds rated A by Moody's based upon holding period returns.

Q. PLEASE EXPLAIN THE BASIS OF THE BETA-DERIVED EQUITY RISK PREMIUM.

A. The basis of the beta-derived equity risk premium applicable to the proxy group is shown on page 8 of Schedule 5. Beta is a meaningful measure of prospective relative risk to the market as a whole and a logical means by which to allocate a company's/proxy group's share of the market's total equity risk premium relative to corporate bond yields.

The total market equity risk premium used is 6.99%, based upon an average of the long-term arithmetic mean historical market equity risk premium, a predicted market equity risk premium based upon the PRPM™ and a forecasted market risk premium based upon *Value Line's* projected market appreciation and dividend yield.

Q. HOW DID YOU DERIVE THE LONG-TERM HISTORICAL MARKET EQUITY RISK PREMIUM?

A. To derive the historical (expectational) market equity risk premium, I used the most recent Morningstar data on holding period returns for the large company common stocks from the Ibbotson® SBBI® 2013 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation (SBBI – 2013)[6] and the average historical yield on Moody's Aaa and Aa rated corporate bonds for the period 1926-2012. The use of holding period

[6] Ibbotson® SBBI® 2013 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation, (SBBI), Morningstar, Inc., 2013, Chicago, IL.

returns over a very long period of time is useful because it is consistent with the long-term investment horizon presumed by investing in a going concern.

Consequently, as explained in note 1 on page 8 of Schedule 5, the long-term arithmetic mean monthly total return rate on large company common stocks of 11.83% and the long-term arithmetic mean monthly yield on Moody's Aaa and Aa rated corporate bonds of 6.23% were used. As shown on Line No. 1, the resultant long-term historical equity risk premium on the market as a whole is 5.60%.

I used arithmetic mean monthly total return rates for the large company stocks and yields (income returns) for the Moody's Aaa/Aa corporate bonds, because they are appropriate for cost of capital purposes as noted in SBBI – 2013[7]. Arithmetic mean return rates and yields are appropriate because historical total returns and equity risk premiums provide insight into the variance and standard deviation of returns needed by investors in estimating future risk when making a current investment. If investors alternatively relied upon the geometric mean of historical equity risk premiums, they would have no insight into the potential variance of future returns because the geometric mean relates the change over many periods to a constant rate of change, thereby obviating the year-to-year fluctuations, or variance, *critical to risk analysis.*

Q. PLEASE EXPLAIN THE DERIVATION OF PRPM™ MARKET EQUITY RISK PREMIUM.

A. The inputs to the model are the historical monthly returns on large company common stocks from minus the monthly yields on Aaa corporate bonds during the period from January 1928 through June 2013 (the latest available at the time of the preparation of this testimony). Using the previously discussed generalized form of ARCH, known as

[7] SBBI 56.

GARCH, the market's projected equity risk premium was determined using Eviews© statistical software. The resulting predicted market equity risk premium based upon the PRPM™ of 9.20% is shown on Line No. 2 on page 8 of Schedule 5.

Q. PLEASE EXPLAIN HOW YOU INCORPORATED *VALUE LINE'S* FORECASTED TOTAL ANNUAL MARKET RETURN MINUS THE PROSPECTIVE YIELD ON AAA RATED CORPORATE BONDS IN YOUR DEVELOPMENT OF AN EQUITY RISK PREMIUM FOR YOUR RPM ANALYSIS?

A. Once again, because both ratemaking and the cost of capital, including the cost rate of common equity, are prospective, a prospective market equity risk premium is essential. The derivation of the forecasted or prospective market equity risk premium can be found in note 3 on page 8 of Schedule 5. Consistent with the development of the dividend yield component of my DCF analysis, it is derived from an average of the most recent thirteen weeks ending September 6, 2013 3-5 year median market price appreciation potential by *Value Line* plus an average of the median estimated dividend yield for the common stocks of the 1,700 firms covered in *Value Line*'s Standard Edition as explained in detail in Note 1 on page 2 of Schedule 6.

The average median expected price appreciation is 42% which translates to a 9.16% annual appreciation and, when added to the average (similarly calculated) median dividend yield of 2.08% equates to a forecasted annual total return rate on the market as a whole of 11.24%. The forecasted total market equity risk premium of 6.16%, shown on page 8 of Schedule 5, is derived by deducting the *Blue Chip* consensus estimate of about 50 economists of the expected yield on Moody's Aaa rated corporate bonds of 5.08% (6.16% = 11.24% - 5.08%).

In arriving at my conclusion of equity risk premium of 6.99% on Line No. 4 on page 8, I have given equal weight to the historical market equity risk premium of 5.60%, the PRPM^{TM} based market equity risk premium of 9.20% and the forecasted market equity risk premium of 6.16% shown on Line Nos. 2 and 3, respectively (6.99% = (5.60% + 9.20% + 6.16%)/3).

Q. WHAT IS YOUR CONCLUSION OF A BETA-DERIVED EQUITY RISK PREMIUM FOR USE IN YOUR RPM ANALYSIS?

A. As shown on page 1 of Schedule 6, the most current median *Value Line* beta for the nine water companies is 0.70. Applying the beta of the proxy group to the market equity risk premium of 6.99% results in a beta adjusted equity risk premium of 4.89% for the nine water companies.

Q. HOW DID YOU DERIVE THE 4.70% EQUITY RISK PREMIUM BASED UPON THE S&P UTILITY INDEX AND MOODY'S A RATED PUBLIC UTILITY BONDS?

A. First, I derived the long-term monthly arithmetic mean equity risk premium between the S&P Utility Index total returns of 10.69% and monthly A rated public utility bond yields of 6.53% from 1928-2012 to arrive at an equity risk premium of 4.16% as shown on Line No. 3 on page 11 of Schedule 5. I then performed the PRPM^{TM} using the same historical monthly equity risk premiums to arrive at the PRPM^{TM} derived equity risk premium of 5.24% for the S&P Utility Index shown on Line No. 4, on page 11. The average of these equity risk premiums is 4.70%, shown on Line No. 5 (4.70% = (4.16% + 5.24%)/2).

Q. WHAT IS YOUR CONCLUSION OF AN EQUITY RISK PREMIUM FOR USE IN YOUR TOTAL MARKET APPROACH RPM ANALYSIS?

A. The equity risk premium applicable to the proxy group of nine water companies is 4.80% which is the average of the beta-derived and S&P utility risk premiums, 4.89% and 4.70%, respectively (4.80% = (4.89% + 4.70%)/2).

Q. WHAT IS THE INDICATED RPM COMMON EQUITY COST RATE BASED UPON THE TOTAL MARKET APPROACH?

A. It is 10.13% for the nine water companies as shown on Line No. 7 on Schedule 5, page 3.

Q. WHAT ARE THE RESULTS OF YOUR APPLICATION OF THE PRPM^{TM} AND THE TOTAL MARKET APPROACH RPM?

A. As shown on page 1 of Schedule 5, the indicated RPM-derived common equity cost rate is 11.04%, derived by averaging the PRPM^{TM} results with the total market approach.

The Capital Asset Pricing Model (CAPM)

Q. PLEASE EXPLAIN THE THEORETICAL BASIS OF THE CAPM.

A. CAPM theory defines risk as the covariability of a security's returns with the market's returns as measured by beta (β). A beta less than 1.0 indicates lower variability while a beta greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk, i.e., all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic, risk. In addition, the CAPM presumes that investors require compensation only for these systematic risks which are the result of macroeconomic and other events that affect the returns on all assets. The model is applied by adding a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the total market as measured by beta. The traditional CAPM model is expressed as:

$$R_s = R_f + \beta(R_m - R_f)$$

Where: R_s = Return rate on the common stock

R_f = Risk-free rate of return

R_m = Return rate on the market as a whole

β = Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have measured the extent to which security returns and betas are related as predicted by the CAPM confirming its validity. The empirical CAPM (ECAPM) reflects the reality that while the results of these tests support the notion that beta is related to security returns, the empirical Security Market Line (SML) described by the CAPM formula is not as steeply sloped as the predicted SML.[8]

In view of theory and practical research, I have applied both the traditional CAPM and the ECAPM to the companies in the proxy group and averaged the results.

Q. PLEASE DESCRIBE YOUR SELECTION OF A RISK-FREE RATE OF RETURN.

A. As shown in column 3 on page 1 of Schedule 6, the risk-free rate adopted for both applications of the CAPM is 4.31%. The risk-free rate for my CAPM analysis is based upon the average of the consensus forecast of the reporting economists of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the fourth calendar quarter of 2014 and the time periods 2015-2019 and 2020-2024 as provided in the September and June 2013 *Blue Chip*, respectively.

Q. WHY IS THE YIELD ON LONG-TERM U.S. TREASURY BONDS APPROPRIATE FOR USE AS THE RISK-FREE RATE?

[8] Roger A. Morin, New Regulatory Finance (Public Utility Reports, Inc., 2006) 175.

A. The yield on long-term U.S. Treasury T-Bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on A rated public utility bonds, the long-term investment horizon inherent in utilities' common stocks and the long-term life of the jurisdictional rate base to which the allowed fair rate of return, i.e., cost of capital will be applied. In contrast, short-term U.S. Treasury yields are more volatile and largely a function of Federal Reserve monetary policy.

Q. PLEASE EXPLAIN THE ESTIMATION OF THE EXPECTED EQUITY RISK PREMIUM FOR THE MARKET.

A. The basis of the market equity risk premium is explained in detail in Note 1 on page 2 of Schedule 6. It is derived from an average of the most recent thirteen weeks ending September 6, 2013 3-5 year median total market price appreciation projections from *Value Line;* the PRPM^{TM} predicted market equity risk premium using monthly equity risk premiums for large company common stocks relative to long-term U.S. Treasury securities from January 1926 through June 2013; and, the arithmetic mean monthly equity risk premiums of large company common stocks relative to long-term U.S. Treasury bond income yields from SBBI-2013 from 1926-2012.

The *Value Line*-derived forecasted total market equity risk premium is derived by deducting the 4.31% prospective risk-free rate discussed above from the *Value Line* projected total annual market return of 11.24%, resulting in a forecasted total market equity risk premium of 6.93%. The PRPM^{TM} market equity risk premium is 10.30%; derived using the PRPM^{TM}, discussed above, relative to the yields on long-term U.S. Treasury securities from January 1926 through June 2013 (the latest available at the time of the preparation of this testimony). The long-term income return on U.S. Government

Securities of 5.28% was deducted from the SBBI-2013 monthly historical total market return of 11.83% resulting in an historical market equity risk premium of 6.55%.

These three market equity risk premiums, when averaged, result in an average total market equity risk premium of 7.93% (7.93% = (6.93% + 10.30% + 6.55%)/3).

Q. WHAT ARE THE RESULTS OF YOUR APPLICATION OF THE TRADITIONAL AND EMPIRICAL CAPM TO THE PROXY GROUP?

A. As shown on Schedule 6, page 1, the average result of my CAPM/ECAPM analyses is 10.08%, the median is 10.16% and the average of the two is 10.12%. Consistent with my reliance upon the average of median and average DCF results discussed above, the indicated common equity cost rate using the CAPM/ECAPM is 10.12%.

Common Equity Cost Rates For The Proxy Group Of Domestic, Non-Price Regulated Companies Based Upon the DCF, RPM and CAPM

Q. WHY DO YOU ALSO FOCUS UPON DOMESTIC, NON-PRICE REGULATED COMPANIES?

A. In the *Hope* and *Bluefield* cases, the Court did not specify that comparable risk companies had to be utilities. Since the purpose of rate regulation is to be a substitute for the competition of the marketplace, non-price regulated firms operating in the competitive marketplace make an excellent proxy if they are comparable in total risk to the utility proxy group being used to estimate the cost of common equity capital. I believe that the basis of the selection of such domestic, non-price regulated competitive firms theoretically and empirically results in a proxy group which is comparable in total risk to the utility proxy group of water companies.

Q. HOW DID YOU GO ABOUT SELECTING UNREGULATED COMPANIES THAT ARE COMPARABLE IN TOTAL RISK TO THE REGULATED PUBLIC UTILITY PROXY GROUP?

A. In order to select a proxy group of domestic, non-price regulated companies similar in total risk to the utility proxy group, I rely upon the betas and related statistics derived from Value Line regression analyses of weekly market prices over the most recent 260 weeks (five years). The bases of selection resulted in a proxy group of twenty-nine domestic, non-price regulated firms comparable in total risk to the utility proxy group. Total risk is the sum of non-diversifiable market risk and diversifiable company-specific risks. The criteria used in the selection of the domestic, non-price regulated firms were:

1) They must be covered by Value Line Investment Survey (Standard Edition).
2) They must be domestic, non-price regulated companies, i.e., non-utilities.
3) Their betas must lie within plus or minus two standard deviations of the average unadjusted beta of the utility proxy group.
4) The residual standard errors of the Value Line regressions which gave rise to the unadjusted betas must lie within plus or minus two standard deviations of the average residual standard error of the utility proxy group.

Betas are a measure of market, or systematic, risk which is not diversifiable. The standard errors of the regressions were used to measure each firm's company-specific, diversifiable risk. Companies that have similar betas and similar standard errors resulting from the same regression analyses have similar total investment risk.

Q. HAVE YOU PREPARED A SCHEDULE WHICH SHOWS THE DATA FROM WHICH YOU SELECTED THE TWENTY-NINE DOMESTIC, NON-PRICE REGULATED COMPANIES THAT ARE COMPARABLE IN TOTAL RISK TO THE UTILITY PROXY GROUP?

A. Yes, the basis of selection and both proxy group's regression statistics are shown in Schedule 7.

Q. DID YOU CALCULATE COMMON EQUITY COST RATES USING THE DCF, RPM AND CAPM FOR THE PROXY GROUP OF DOMESTIC, NON-PRICE REGULATED COMPANIES THAT ARE COMPARABLE IN TOTAL RISK TO THE UTILITY PROXY GROUP?

A. Yes. Because the DCF, RPM and CAPM have been applied in an identical manner as described above relative to the market data of the nine water companies, I will not repeat the details of the rationale and application of each model. An exception is that, in the application of the RPM, I did not use public utility-specific equity risk premiums nor applied the PRPM^{TM} to the individual companies.

Page 2 of Schedule 8 contains the derivation of the DCF cost rates. As shown, the indicated common equity cost rate using the DCF for the proxy group of twenty-nine non-price regulated companies comparable in total risk to the nine water companies, is 11.29%.

Pages 3 through 5 contain information relating to the 10.89% RPM cost rate. As shown on Line No. 1 of page 3 of Schedule 8, the consensus prospective yield on Moody's Baa rated corporate bonds from *Blue Chip* is 6.00%. Since the twenty-nine non-price regulated companies have an average Moody's bond rating of Baa2 as shown on page 4 of Schedule 8, no adjustment is necessary to make the prospective bond yield applicable to the Baa corporate bond yield. Thus, the expected specific bond yield is 6.00%.

When the beta-adjusted risk premium of 4.89% relative to the proxy group of non-price regulated companies, as derived on page 5, is added to the prospective Baa rated corporate bond yields, the indicated RPM cost rate is 10.89%.

Page 6 contains the details of the indicated CAPM/ECAPM cost rate of 10.14%.

Q. WHAT IS YOUR CONCLUSION OF THE COST RATE OF COMMON EQUITY BASED UPON THE PROXY GROUP OF NON-PRICE REGULATED

COMPANIES COMPARABLE IN TOTAL RISK TO THE NINE WATER COMPANIES?

A. As shown on page 1 of Schedule 8, the results of the DCF, RPM and CAPM applied to the non-price regulated group comparable in total risk to the nine water companies are 11.29%, 10.89% and 10.14%, respectively. The average of the average and median of these models is 10.83%, which is the indicated common equity cost rate for the proxy group of non-price regulated companies as summarized on page 1 of Schedule 8.

Conclusion of Common Equity Cost Rate

Q. WHAT IS YOUR RECOMMENDED RANGE OF COMMON EQUITY COST RATES?

A. It is from 10.45% to 11.45% based upon the indicated common equity cost rate of 10.95% resulting from the application of multiple cost of common equity models to the nine water companies adjusted for UUC's business risk.

I use multiple cost of common equity models as primary tools in arriving at my recommended common equity cost rate because; 1) no single model is so inherently precise that it can be relied upon solely to the exclusion of other theoretically sound models; 2) the use of multiple models adds reliability to the estimation of the common equity cost rate; and, and 3) as demonstrated above, the prudence of using multiple cost of common equity models is supported in both the financial literature and regulatory precedent. As a result, no single model should be relied upon exclusively to estimate investors' required rate of return on common equity.

Based upon these common equity cost rate results, I conclude that a common equity cost rate of 10.35% is indicated for the nine water companies before any relative risk adjustments are made.

Relative Risk Adjustment

Q. IS THERE A WAY TO QUANTIFY A RELATIVE RISK ADJUSTMENT DUE TO UUC'S SMALL SIZE RELATIVE TO THE PROXY GROUP?

A. Yes. The Company has greater relative risk than the average company in the proxy group because of its smaller size compared to the group, measured by the estimated market capitalization of common equity for UUC, whose common stock is not traded.

Table 3

	Market Capitalization(1) ($ Millions)	Times Greater than the Company
United Utility Companies, Inc.	$2.273	
Proxy Group of Nine Water Companies	1,558.357	562.0x

(1) From page 1 of Schedule 9.

Because the Company's common stock is not publicly traded, I have assumed that if it were, the common shares would be selling at the same market-to-book ratio as the average market-to-book ratio for the proxy group, 192.8%, on August 30, 2013 as shown on page 2 of Schedule 9. Since my recommended common equity cost rate is based upon the market data of the proxy group, it is reasonable to use the market-to-book ratios of the proxy group to estimate UUC's market capitalization. Accordingly, the Company's market capitalization is estimated at $2.273 million based upon the average market-to-book ratio of the proxy group. In contrast, the market capitalization of the average water company was $1.558 billion on August 30, 2013, or 562.0 times the size of UUC's estimated market capitalization.

As a result, it is necessary to upwardly adjust the indicated common equity cost rate of 10.35% based upon the nine water companies to reflect UUC's greater risk due to

its smaller relative size. The determination is based upon the size premiums for decile portfolios of New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2012 period and related data from SBBI® – 2013. The average size premium in the 6th decile in which the nine water companies fall has been compared with the average size premium for the 10th decile in which the market capitalization of UUC would fall if its stock were traded and sold at the August 30, 2013 average market/book ratio of 192.8% experienced by the nine water companies. As shown on page 1, the size premium spread between the 10th decile and the 6th decile is 4.31%. In order to be conservative, I have only adjusted UUC's indicated common equity cost rate upward by 0.60%, even though 4.31% was indicated.

Q. PLEASE EXPLAIN WHY SIZE HAS A BEARING ON BUSINESS RISK.

A. Company size is a significant element of business risk for which investors expect to be compensated through greater returns. Smaller companies are simply less able to cope with significant events which affect sales, revenues and earnings. For example, smaller companies face more risk exposure to business cycles and economic conditions, both nationally and locally. Additionally, the loss of revenues from a few larger customers would have a greater effect on a small company than on a much larger company with a larger, more diverse, customer base.

Further evidence of the risk effects of size include the fact that investors demand greater returns to compensate for the lack of marketability and liquidity of the securities of smaller firms. For these reasons, the Commission should authorize a cost of common equity in this proceeding that reflects UUC's relevant risk, including the impact of its small size.

Consistent with the financial principle of risk and return discussed above, such increased risk due to small size must be taken into account in the allowed rate of return on common equity for UUC.

A size adjustment of 0.60%, when added to the 10.35% indicated common equity cost rate based upon the nine water companies before adjustment, results in a size-adjusted indicated common equity cost rate of 10.95%. I then conclude that a common equity cost rate in the range of 10.45% to 11.45% appropriate for UUC in this case.

In my opinion, a range of common equity cost rate between 10.45% and 11.45% is both reasonable and conservative, providing UUC with sufficient earnings to enable it to attract necessary new capital.

Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

APPENDIX A

PROFESSIONAL QUALIFICATIONS

OF

DYLAN W. D'ASCENDIS, CRRA
PRINCIPAL

AUS CONSULTANTS

PROFESSIONAL QUALIFICATIONS
OF
DYLAN W. D'ASCENDIS, CRRA
PRINCIPAL
AUS CONSULTANTS

PROFESSIONAL EXPERIENCE

2008-Present

I prepare fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. These supporting exhibits include the determination of an appropriate ratemaking capital structure and the development of embedded cost rates of senior capital. The exhibits also support the determination of a recommended return on common equity through the use of various market models, such as, but not limited to, Discounted Cash Flow analysis, Capital Asset Pricing Model and Risk Premium Methodology, as well as an assessment of the risk characteristics of the client utility. I also assist in the preparation of class cost of service, rate design, cash working capital, original cost and valuation studies. I prepare responses to interrogatories received regarding such testimonies filed on behalf of client utilities. Following the filing of fair rate of return testimonies, I evaluate opposition testimony in order to prepare interrogatory questions, areas of cross-examination, and rebuttal testimony. I also evaluate and assist in the preparation of briefs and exceptions following the hearing process.

I also evaluate the final orders and decisions of various commissions to determine whether further actions are warranted and to gain insight which may assist in the preparation of future rate of return studies.

In April 2011, I earned the Certified Rate of Return Analyst (CRRA) designation from the Society of Utility and Regulatory Financial Analysts (SURFA). This is based upon education, experience and the successful completion of a comprehensive examination.

As the Editor of AUS Utility Reports (formerly C. A. Turner Utility Reports), I am responsible for the data collection, distribution, marketing and billing of the AUS Monthly Utility Report, which provides comprehensive information on key ratios and industry rankings based upon financial statistics presented in the report for the electric, gas and water industries. I also assist in the calculation and production of the AGA Index, a market capitalization weighted index of the common stocks of the approximately 70 corporate members of the AGA.

I have filed testimony on cost of capital on behalf of the following clients:

Columbia Water Company
Louisiana Water Service, Inc
Twin Lakes Utilities, Inc.

I have filed testimony on capital structure on behalf of the following clients:

Penn Estates Utilities, Inc.
Tega Cay Water Service, Inc.

I have assisted in the preparation of studies on behalf of the following clients:

The Regulatory Commission of Alaska
City of Allentown, PA
Alpena Power Company
Anadarko Petroleum Corporation
Apple Canyon Utility Company
Applied Wastewater
Aqua New Jersey, Inc.
Aqua North Carolina, Inc.
Aqua Ohio, Inc.
Aquarion Water Company of Connecticut
Aquarion Water Company of Massachusetts
Artesian Water Company
The Atlantic City Sewerage Company
Carolina Water Service of North Carolina
Carolina Water Service of South Carolina
The Columbia Water Company
The Connecticut Water Company
Corix Multi-Utility Inc.
Delmarva Power and Light Company
Equitable Gas Company

Clients Continued

Illinois American Water Company
Interstate Power & Light Company
Iowa American Water Company
Jersey Central Power & Light Company
Lake Wildwood Utility Corporation
Long Island American Water Company
Massanutten Public Service Company
Middlesex Water Company
Missouri Gas Energy
Missouri-American Water Company
Mountaineer Gas Company
New England Gas Company
New Jersey-American Water Company
The Newtown Artesian Water Company
NRG Energy Center Harrisburg LLC
Ohio-American Water Company
Penn Estates Utilities
Peoples Water Service Company of Bastrop
Penn Estates Utilities Inc.
Philadelphia Gas Works
Piedmont Natural Gas Company
Pinelands Water Company
Pinelands Wastewater Company
The Village of Plandome
San Gabriel Water Company
San Jose Water Company
Southwest Gas Corporation
Spring Creek Utilities, Inc.
Suffolk County, NY
Tega Cay Water Service, Inc.
Tesoro Alaska Company
Tidewater Utilities, Inc.
Trigen – Philadelphia Energy Corporation
United Utility Companies
United Water Arkansas, Inc.
United Water Arlington Hills Sewerage, Inc.
United Water Connecticut, Inc.
United Water Delaware, Inc.
United Water Great Gorge, Inc.
United Water Idaho, Inc.
United Water New Jersey, Inc.
United Water New Rochelle, Inc.
United Water New York, Inc.
United Water Owego Nichols, Inc.
United Water Pennsylvania, Inc.
United Water Rhode Island, Inc.
United Water Toms River, Inc.
United Water Vernon Sewerage, Inc.
United Water West Milford, Inc.
United Water Westchester, Inc.
Utilities Inc. of Central Nevada
Utilities, Inc. of Florida
Utilities, Inc. of Louisiana
Utilities, Inc. of Nevada
Utilities, Inc. of Pennsylvania
Utilities, Inc. - Westgate
Utility Center, Inc.
Washington Gas Light Company
Water Service Company of Indiana
Water Services Corp. of Kentucky
Wisconsin Power and Light Company

EDUCATION:

University of Pennsylvania – B.A. –Economic History
Rutgers University – M.B.A. – Cum Laude (Concentration: Finance and International Business, including an independent study on public utility ratemaking)
New Mexico State University – Practical Training for the Electric Industry

PROFESSIONAL AFFILIATIONS:

Society of Utility and Regulatory Financial Analysts
National Association of Water Companies

SPEAKING ENGAGEMENTS:

"Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks", before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum, April 17-18, 2013, Indianapolis, IN.

"Application of a New Risk Premium Model for Estimating the Cost of Common Equity", Co-Presenter with Pauline M. Ahern, CRRA, AUS Consultants, Edison Electric Institute Cost of Capital Working Group, October 3, 2012, Webinar.

"Application of a New Risk Premium Model for Estimating the Cost of Common Equity", Co-Presenter with Pauline M. Ahern, CRRA, AUS Consultants, Staff Subcommittee on Accounting and Finance of the National Association of Regulatory Commissioners, September 10, 2012, St. Paul, MN.

Chair – "Cost of Capital" - Advanced Workshop in Regulation and Competition, 31st Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 18, 2012, Rutgers University, Shawnee on Delaware, PA.

PAPERS:

"Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", co-authored with Pauline M. Ahern, CRRA, Richard A. Michelfelder, Ph.D. of Rutgers University and Frank J. Hanley, The Electricity Journal, May 2013.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", co-authored by Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D., Rutgers University, The Journal of Regulatory Economics (December 2011), 40:261-278. (Research Assistant)